

## SECTION I

## GENERAL

## 1-1. TYPE OF CONSTRUCTION.

1-2. GENERAL. The L-17 series airplanes carry three passengers and pilot. They are all metal, single engine, low wing monoplanes. The airplane is composed of a cantilever wing, semi-monocoque fuselage, horizontal stabilizer, elevator, vertical fin, rudder and retractable tricycle landing gear. Each wing is a semi-monocoque, cantilever structure consisting of a single wing panel, aileron and flap. The internal structure of the wing consists of front and center stub spars and full span rear spar, ribs, stringers and stiffeners. The aileron and flap consist of spars, ribs and beaded skin. The fuselage is semi-monocoque and consists of bulkheads, longerons, skin and stiffeners. The engine nacelle structure is also semi-monocoque construction and is bolted to the fuselage at the firewall. The tail surfaces, like the aileron and flap, are made up of spars, ribs and skin. Rudder skin is beaded, the elevator's is not. The landing gear is composed of two main gears and a nose gear. The structural details of these various airplane components are described in their respective sections of this manual.

## 1-3. INVESTIGATING DAMAGE.

1-4. GENERAL. Damage to the airplane structure must be cleaned up so that a thorough inspection may be made of the damaged member or members and the adjacent structure. The adjacent structure should be inspected to determine what secondary damage resulted from the transmission of the load which caused the primary damage. Thoroughly check the adjacent structure for dents, scratches, abrasions, cracks, punctures, loose joints and distortion. Check all riveted or bolted joints and fittings which may have been loosened or damaged. If there is any doubt as to the failure of a rivet or a bolt, remove this rivet or bolt and inspect for possible failure of the hole. Web and skin wrinkles should be thoroughly inspected to determine whether they are permanent stress wrinkles. When such a condition of distortion is ascertained, carefully check the structures adjacent to this for permanent set or failures.

1-5. AIRPLANE ALIGNMENT. Certain types of damage may result in secondary distortion, not readily apparent, and which can be detected only by checking the alignment of the airplane. Hard landings, flight loads exceeding design requirements or faulty repairs of a major nature may cause such distortion. If this type of damage is suspected, an alignment check should be made. The overall airplane alignment dimensions are shown in Figure 1-2. The horizontal datum point is fuselage station 0. As this station is forward of the airplane, a reference jig point is established at the centerline of the most forward bolt in the wing lower surface splice angle (Fuselage Station 93-1/4) as shown in Figure 1-2.

## 1-6. SUPPORT OF STRUCTURE DURING REPAIR.

1-7. GENERAL. Before repair, removal, or replacement of any component of the airplane is undertaken, support the component so that proper alignment is maintained and distortion prevented throughout the repair. During extensive repairs, firmly support or remove those

airplane parts which produce concentrated loads on the structure. Instructions for the removal of such parts as the engine and landing gear are given in the Erection and Maintenance Handbook, AN01-100LAA-2. When special fixtures to support the airplane or any of its components are not available, improvised supports should be fabricated from material available. Basic jig alignment dimensions are given at the end of each corresponding section of this handbook.

## 1-8. LEVELING.

1-9. GENERAL. The leveling lugs are located on the lower right hand side of the fuselage, forward of the wing. The canopy tracks at the windshield junction are used for lateral leveling. See Figures 1-3 and 1-4.

1-10. OPERATION. Place the airplane on jacks, using the two wing jacks and the tail skid as shown in the Erection and Maintenance Handbook AN01-100LAA-2 and Figure 1-4. Place a precision spirit level on the fore and aft leveling lugs and raise or lower the tail as necessary to bring the airplane into a longitudinally level position. To level the airplane laterally, place a precision spirit level across the left and right canopy track at the windshield junction and raise or lower either wing as necessary to bring the airplane into a laterally level position. Recheck the longitudinal level. If a correction is needed, recheck the lateral level after this second longitudinal level is determined. Repeat this procedure until the airplane is leveled both longitudinally and laterally.

## NOTE

If the spirit level used does not span the leveling lugs or canopy tracks, use a suitable steel bar to span the leveling lugs or canopy tracks. The steel bar must be straight with a smooth surface to insure accurate leveling.

## CAUTION

If a bubble protractor is used in place of a spirit level, make certain that the protractor is set at zero prior to leveling.

## 1-11. CLASSIFICATION OF DAMAGE.

1-12. GENERAL. After the extent of damage to structural members has been determined classify the damage into one of the following categories: Negligible Damage, Damage Repairable by Patching, Damage Repairable by Insertion, Damage Necessitating Replacement of Parts.

## 1-13. NEGLIGIBLE DAMAGE.

1-14. DEFINITION. Negligible damage is the damage or distortion which may be permitted to exist as is, or may be corrected by some simple procedure such as removing dents, stop drilling cracks or deep scratches, trimming the damage smooth, applying temporary fabric patches etc.; without placing restrictions on flight.